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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	Examiner: Audrey. Y. Chang
David Hartkop	Group Art: 2872
Serial No.: 10/817,592	
Filed: April 2, 2004	
For: SCANNING APERTURE THREE DIMENSIONAL DISPLAY DEVICE	

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AMENDMENT UNDER 37 C.F.R. §1.116

The Office Action mailed August 28, 2008 has been reviewed and carefully considered.

Listing and Amendments to the claims begin on page 2 of this paper.

Remarks/Arguments begin on page 17 of this paper.

Claims

This listing of the claims shall supersede all previous listings of the claims.

1. (Previously presented) A three dimensional display device comprising:

a display screen having pixels and a pixel width;

an aperture plate including apertures and opaque areas formed by closed apertures between open apertures that is disposed in front of said display screen;

wherein the aperture plate is configured such that the open apertures scan the aperture plate in two-dimensional movements to generate an illusion that the opaque areas are transparent; and

a gap separating said display screen and said aperture plate, said gap being within a range of 0.1cm – 5cm;

wherein the three dimensional display provides multiple different perspectives of a scene that form perceived 3D images of the scene simultaneously viewable from respective multiple different user viewing angles.

2. (Previously presented) The three dimensional display device according to claim 1, further comprising a control system connected to said display screen and said aperture plate, said control system controlling sequencing of image portions on said display screen and controlling sequencing of predetermined apertures of said aperture plate to produce three-dimensional images.

3. (Original) The three dimensional display device according to claim 1, wherein said gap comprises an air gap between said display screen and said aperture plate.

4. (Original) The three dimensional display device according to claim 1, wherein said gap comprises a solid substrate between said display screen and said aperture plate.

5. (Previously presented) The three dimensional display device according to claim 1, wherein said aperture plate is capable of producing vertical slit aperture openings having a slit width.

6. (Original) The three dimensional display device according to claim 5, wherein said slit width is equal to said pixel width.

7. (Original) The three dimensional display device according to claim 5, wherein said slit width is wider than said pixel width.

8. (Original) The three dimensional display device according to claim 1, wherein said aperture plate includes a predetermined number of apertures, said predetermined number of apertures being less than a number of pixels on the display screen.

9. (Previously presented) The three dimensional display device according to claim 1, wherein said aperture plate includes a predetermined number of active regions configured to form open apertures and opaque areas in accordance with an aperture scanning operation, said predetermined number of active regions being equal to a number of pixels on the display screen.

10. (Original) The three dimensional display device according to claim 1, wherein said display comprises a high frame rate video display device having frame rates exceeding 150 frames per second.

11. (Previously presented) The three dimensional display device according to claim 1, wherein said display comprises a high frame rate video display device having a frame rate, wherein said display has a resolution capable of producing at least 8 different perspectives, each different perspective viewable from a different viewing angle.

12. (Previously Presented) The three dimensional display device according to claim 11, wherein said frame rate comprises at least 150 frames per second.

13. (Original) The three dimensional display device according to claim 1, wherein said aperture plate comprises a high speed optical shuttering system.

14. (Original) The three dimensional display device according to claim 10, wherein said display is a direct display and is one selected from a group consisting of Liquid Crystal Display (LCD), Ferroelectric LCD (FLCD), Organic LED (OLED) and Plasma displays.

15. (Original) The three dimensional display device according to claim 10, wherein said display is a rear projection display device.

16. (Previously presented)The three dimensional display device according to claim 15, wherein said display is one selected from a group consisting of a high speed projector and a Digital Light Processing (DLP) projection system.

17. (Previously presented) The three dimensional display device according to claim 7, wherein said aperture plate comprises a solid state scan type aperture plate.

18. (Previously presented) The three dimensional display device according to claim 17, wherein said solid state scan type aperture plate comprises one selected from a group consisting of flat scanners and curved scanners.

19. (Original) The three dimensional display device according to claim 1, wherein said display device comprises a Ferroelectric LCD (FLCD).

20. (Original) The three dimensional display device according to claim 1, wherein said aperture plate comprises a Ferroelectric LCD (FLCD).

21. (Previously presented) A three dimensional display device comprising:

a display screen having pixels and a pixel width;

an aperture plate including apertures and opaque areas formed by closed apertures between open apertures that is disposed in front of said display screen;

wherein the aperture plate is configured such that the open apertures scan the aperture plate in two-dimensional movements to generate an illusion that the opaque areas are transparent; and

a distance separating said display screen and said aperture plate;

wherein combined operation of the aperture plate and display screen generates a three dimensional display exhibiting both horizontal and vertical parallax;

wherein the three dimensional display provides multiple different perspectives of a scene that form perceived 3D images of the scene which are simultaneously viewable from respective multiple different user viewing angles with respect to an open aperture.

22. (Original) The three dimensional display device according to claim 21, wherein said apertures have a size not smaller than a size of said pixels.

23. (Original) The three dimensional display device according to claim 21, wherein said distance is within a range of 0.1cm – 5cm.

24. (Original) The three dimensional display device according to claim 21, wherein said distance separating said display screen from said aperture plate comprises an air gap.

25. (Original) The three dimensional display device according to claim 21, wherein said distance separating said display screen from said aperture plate comprises a solid substrate.

26. (Original) The three dimensional display device according to claim 21, wherein said display screen is dimensionally larger than said aperture plate.

27. (Previously presented) The three dimensional display device according to claim 21, wherein at least one of the perceived 3D images comprises a horizontal view angle range of at least 10 – 30 degrees from normal.

28. (Original) The three dimensional display device according to claim 21, wherein said horizontal parallax has a viewable operating range up to 180 degrees.

29. (Previously presented) The three dimensional display device according to claim 21, wherein the 3D image displayed comprises a vertical view angle range comprises 5 – 25 degrees from normal.

30. (Original) The three dimensional display device according to claim 21, wherein said vertical parallax has a viewable operating range up to 180 degrees.

31. (Previously presented) The three dimensional display device according to claim 21, wherein said display screen comprises a high frame rate video display device.

32. (Previously presented) The three dimensional display device according to claim 31, wherein said display screen comprises a frame rate exceeding 150 frames per second.

33. (Previously presented) The three dimensional display device according to claim 31, wherein said display screen comprises a Ferroelectric LCD (FLCD) device.

34. (Original) The three dimensional display device according to claim 21, wherein said aperture plate comprises a high speed optical shuttering system.

35. (Previously presented) The three dimensional display device according to claim 21, wherein said display screen is one selected from a group consisting of LCD, Ferroelectric LCD, Organic LED (OLED) and Plasma displays.

36. (Previously presented) The three dimensional display device according to claim 21, wherein said display screen is a rear projection display device.

37. (Previously presented) The three dimensional display device according to claim 36, wherein said display screen is one selected from a group consisting of a high speed projector and a DLP.

38. (Previously presented) The three dimensional display device according to claim 32, wherein said aperture plate comprises a solid state scan type.

39. (Previously presented) The three dimensional display device according to claim 38, wherein said solid state scan type comprises one selected from a group consisting of flat and curved scanners.

40. (Original) The three dimensional display device according to claim 34, wherein said aperture plate comprises a Ferroelectric LCD device.

41. (Original) The three dimensional display device according to claim 21, wherein a number of vertical viewing angles is less than a number of horizontal viewing angles.

42. (Previously presented) A solid state three dimensional display device comprising:

a display matrix;

a substrate; and

an LCD dynamic parallax barrier, including apertures and opaque areas formed by closed apertures between open apertures, said display matrix and said LCD dynamic parallax barrier being bonded to opposing sides of said substrate;

wherein the LCD dynamic parallax barrier is configured such that the open apertures scan the LCD dynamic parallax barrier in two-dimensional movements to generate an illusion that the opaque areas are transparent;

wherein the solid state three dimensional display device generates a three dimensional display exhibiting both horizontal and vertical parallax;

wherein the three dimensional display provides multiple different perspectives of a scene that form perceived 3D images of the scene which are simultaneously viewable from respective multiple different user viewing angles with respect to an open LCD dynamic parallax barrier opening.

43. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said substrate has a thickness in a range of 0.1cm – 5cm.

44. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said display matrix comprises pixels, said apertures having a size not smaller than a size of said pixels.

45. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said display matrix comprises a color FLCD device.

46. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said LCD dynamic parallax barrier comprises a FLCD device.

47. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said display matrix comprises a display having a frame rate exceeding 150 frames per second.

48. (Previously presented) The solid state three dimensional display device according to claim 47, wherein said display matrix comprises a display having a frame rate no greater than 20,000 frames per second.

49. (Previously presented) The solid state three dimensional display device according to claim 42, wherein the horizontal parallax comprises a horizontal view angle range of 20 – 60 degrees.

50. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said horizontal parallax has a viewable operating range up to 180 degrees.

51. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said vertical parallax comprises a vertical view angle range of 10 – 50 degrees.

52. (Previously presented) The solid state three dimensional display device according to claim 42, wherein said vertical parallax has a viewable operating range up to 180 degrees.

53. (Canceled).

54. (Canceled).

55. (Canceled).

56. (Canceled).

57. (Previously presented) A solid state three dimensional display device comprising:

a flat screen Ferroelectric LCD display matrix;

a substrate; and

a flat screen Ferroelectric LCD dynamic parallax barrier, including apertures and opaque areas formed by closed apertures between open apertures, said display matrix and said FLCD dynamic parallax barrier being bonded to opposing sides of said substrate;

wherein the flat screen Ferroelectric LCD dynamic parallax barrier is configured such that the open apertures scan the flat screen Ferroelectric LCD dynamic parallax barrier in two-dimensional movements to generate an illusion that the opaque areas are transparent;

wherein the display device generates a three dimensional display exhibiting both horizontal and vertical parallax;

wherein the three dimensional display provides multiple different perspectives of a scene that form perceived 3D images of the scene which are simultaneously viewable from respective multiple different user viewing angles with respect to an open Ferroelectric LCD dynamic parallax barrier opening.

58. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said substrate has a thickness in a range of 0.1cm – 5cm.

59. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said display matrix comprises pixels, said apertures having a size not smaller than a size of said pixels.

60. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said display matrix comprises a color FLCD device.

61. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said LCD dynamic parallax barrier comprises a FLCD device.

62. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said display matrix comprises a display having a frame rate exceeding 150 frames per second.

63. (Previously presented) The solid state three dimensional display device according to claim 62, wherein said display matrix comprises a display having a frame rate no greater than 20,000 frames per second.

64. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said horizontal parallax comprises a horizontal view angle range of 20 – 60 degrees.

65. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said horizontal parallax has a viewable operating range up to 180 degrees.

66. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said vertical parallax comprises a vertical view angle range of 10 – 50 degrees.

67. (Previously presented) The solid state three dimensional display device according to claim 57, wherein said vertical parallax has a viewable operating range up to 180 degrees.

68. (Previously presented) A three dimensional display device comprising:

a flat screen display having pixels and a pixel width;

a flat aperture plate including apertures and opaque areas formed by closed apertures between open apertures that is disposed in front of said display screen;

wherein the flat aperture plate is configured such that the open apertures scan the flat aperture plate in two-dimensional movements to generate an illusion that the opaque areas are transparent; and

a gap separating said display screen and said aperture plate, said gap being within a range of 0.1cm – 5cm;

wherein the three dimensional display provides multiple different perspectives of a scene which are simultaneously viewable from multiple different user viewing angles with respect to an open aperture.

69. (Original) The three dimensional display device according to claim 68, wherein said flat screen display and said flat aperture plate comprise a Ferroelectric LCD device.

70. (Original) The three dimensional display device according to claim 68, wherein said flat screen display and said flat aperture plate have frame rates exceeding 150 frames per second.

71. (Previously presented) The three dimensional display device according to claim 70, wherein said flat screen display comprises a display having a frame rate no greater than 20,000 frames per second.

72. (Previously presented) The three dimensional display device according to claim 68, wherein the multiple different user viewing angles comprise a horizontal view angle range of 20 – 60 degrees.

73. (Previously presented) The three dimensional display device according to claim 68, wherein the multiple different user viewing angles comprise a horizontal viewable operating range up to 180 degrees.

74. (Previously presented) The three dimensional display device according to claim 68, wherein the multiple different user viewing angles comprise a vertical view angle range of 10 – 50 degrees.

75. (Previously presented) The three dimensional display device according to claim 68, wherein the multiple different user viewing angles comprises a vertical viewable operating range up to 180 degrees.

76. (Previously presented) A three dimensional display device comprising:

a hybrid screen display having pixels and a pixel width;

a flat aperture plate including apertures and opaque areas formed by closed apertures between open apertures that is disposed in front of said display screen;

wherein the flat aperture plate is configured such that the open apertures scan the flat aperture plate in two-dimensional movements to generate an illusion that the opaque areas are transparent; and

a gap separating said display screen and said aperture plate, said gap being within a range of 0.1cm – 5cm;

wherein the three dimensional display simultaneously provides multiple different viewable perspectives of a scene based on horizontal and vertical viewing angles with respect to an open aperture.

77. (Original) The three dimensional display device according to claim 76, wherein said hybrid screen display comprises a high speed video projector and a display screen.

78. (Previously presented) The three dimensional display device according to claim 76, wherein the horizontal viewing angles comprise a horizontal view angle range of 20 – 60 degrees.

79. (Previously presented) The three dimensional display device according to claim 76, wherein said horizontal viewing angles has a viewable operating range up to 180 degrees.

80. (Previously presented) The three dimensional display device according to claim 76, wherein said vertical viewing angles comprise a vertical view angle range of 10 – 50 degrees.

81. (Previously presented) The three dimensional display device according to claim 76, wherein said vertical viewing angles have a viewable operating range up to 180 degrees.

Remarks/Arguments

The Office Action of August 28, 2008 has been reviewed and carefully considered. Claims 53-56 remain canceled without prejudice. No claim amendments have been made in this paper. Claims 1-52 and 57-81 are now pending in this application. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

A. Rejections under 35 U.S.C. 112, First Paragraph

(1) Written Description requirement

The Examiner has rejected claims 1-52 and 57-81 for failing to comply with the written description requirement. In particular, the Examiner has alleged that the phrase "open apertures scan the aperture plate in two-dimensional movements" is not supported by the original disclosure because the specification purportedly fails to "give EXPLICIT teachings concerning the two dimensional movements of open apertures." The Applicant respectfully disagrees. Figure 15 of the Specification clearly illustrates that an open aperture is scanned over a two-dimensional region (see also Specification, p. 25, lines 5-11). Furthermore, the Specification states that the scanning pattern may, for example, be "stair stepped," also illustrating that two dimensional movements of open apertures is supported in the Specification (see, e.g., Specification, p. 25, lines 9-10). Accordingly, withdrawal of the rejection is respectfully requested.

(2) Enablement Requirement

The Examiner has rejected claims 1-52 and 57-81 for failing to comply with the enablement requirement. Specifically, the Examiner has alleged that the Specification and the claims fail to teach how a scanning aperture plate is capable of providing a three-dimensional image display. In support, the Examiner cites a section of the Specification and states that a perspective view needs to be displayed on a display screen in a manner synchronized with the scanning apertures to provide a three-dimensional illusion. Further, the Examiner states that the claimed image display is therefore not enabling because it simply has an aperture plate scanning the plate.

The Applicant respectfully disagrees. In addition to an aperture plate and scanning apertures, a display is actively claimed. The specification describes how a three-dimensional image may be generated by employing a display and a scanning aperture plate with sufficient detail to enable one of ordinary skill in the art to make and use the invention (see, e.g., Specification, p. 13, lines 5-21). Thus, the Specification complies with the enablement requirement.

The Examiner also maintains that the Specification fails to teach that multiple different perspectives form perceived 3D images simultaneously viewable from respective multiple different user viewing angles. The Examiner asserts that only a single perceived three dimensional image is formed by essentially simultaneous viewing from respective different user viewing angles. In addition, throughout the office action, the Examiner has stated that it is not possible for multiple perspectives to form multiple perceived 3D images.

The Applicant respectfully disagrees. As discussed at length in the previous Response to the Office Action dated June 18, 2007 (see, e.g., p. 22, third paragraph), different perspectives

are simultaneously viewable in that different observers may view different perspectives provided by a 3D display device at the same time. Similarly, a plurality of perceived three dimensional images is formed because multiple observers at different user viewing angles may view the multiple different perspectives. Thus, the feature of multiple different perspectives forming perceived 3D images simultaneously viewable from respective multiple different user viewing angles is clearly enabled by the Specification (see, e.g., Response to the Office Action dated June 18, 2007, p. 22, third paragraph).

Regarding claim 76, the Examiner asserts that the Specification does not satisfy the enablement requirement, as the Specification fails to describe how a hybrid screen is formed. The Applicant respectfully submits that a hybrid screen as described in the Specification is known to those of ordinary skill in the art (see, e.g., Specification, p. 20, lines 17-22). One example of a hybrid screen is described in U.S. Patent No. 5,790,217 to Lee et al. As such, the Specification need not include a detailed description of how a hybrid screen is formed to satisfy the enablement requirement for claim 76.

Accordingly, withdrawal of the rejection is respectfully requested for at least the reasons discussed above.

B. Claim Objections

1. Objection to claims 1, 21, 42, 57, 68 and 76 (open apertures scan . . . .)

The Examiner has stated that the "phrase 'the open apertures scan the aperture plate (or the flat screen Ferroelectric LCD dynamic parallax barrier) in two dimensional movements to generate an illusion that the opaque areas are transparent,' recited in claims 1, 21, 42, 57, 68 and 76 is confusing." The Applicant respectfully disagrees. It should be noted that the claims should

be interpreted in light of the Specification. In light of the Specification, it is respectfully submitted that the claim language is not confusing (see, e.g., Specification, p. 20, lines 5-21; p. 24, line 15 to p. 25, line 11). Accordingly, withdrawal of the objection is respectfully requested.

2. Objection to claims 1, 21, 42, 57, 68 and 76 (multiple different perspectives . . . .)

The Examiner has objected to the phrase "provides multiple different perspectives of a scene that form perceived 3D images." Specifically, the Examiner alleges that the phrase is "confusing and wrong since multiple perspectives of a scene would form a single 3D image not plural images." The Applicant respectfully disagrees. As stated above, multiple perspectives may be provided simultaneously such that multiple, different users may perceive different three-dimensional images at the same time. Accordingly, withdrawal of the objection is respectfully requested.

The Examiner has also stated that it is "not clear what is the relationship between the 'scene' and the '3D object.'" Although the source of confusion is unclear, the claim recites 3D images of a scene. In addition, a scene may include one or more objects. As the claim language is clear, withdrawal of the objection is respectfully requested.

3. Objection to use of the word "sequencing" in claim 2.

Claim 2 stands objected to because use of the word "sequencing" is purportedly confusing. The sequencing of image portions on the display screen produces a perceived three-dimensional image, as the sequencing maintains a three-dimensional view during the scanning operation recited in claim 1, from which claim 2 depends (see also, e.g., Specification, p. 13, lines 11-21). Furthermore, image portions may correspond to 2-D images that may be behind

each momentarily opened apertures, as discussed in the Specification (see, e.g., Specification, p. 13, lines 13-21). Accordingly, withdrawal of the objection of is respectfully requested.

4. Objection to the words "produce" and "capable of" recited in claim 5.

The Examiner has objected to claim 5 on two grounds: an aperture plate will not "produce" slit apertures; and the word "capable of" is confusing. The Applicant respectfully disagrees.

Claim 5 recites, inter alia: "three dimensional display device according to claim 1, wherein said aperture plate is capable of producing vertical slit aperture openings having a slit width." An aperture plate may "produce" slit apertures. For example, as described in the Specification, an aperture plate may comprise a liquid crystal display parallax barrier that may include discrete active regions that may be switched from being opaque to being transparent by the application of an electrical current (see, e.g., Specification, p. 28, lines 6-9). The active regions may be configured to form slit apertures (see, e.g., Specification, p. 28, lines 9-20). Thus, an aperture plate may indeed "produce" slit apertures.

Moreover, the phrase "capable of producing vertical slit aperture openings having a slit width" is a distinct property of the aperture plate. The metes and bounds of the claim are easily determinable by one of ordinary skill in the art. The phrase clearly describes an aperture plate that is readily adaptable to produce slit apertures. For example, the liquid crystal display parallax barrier described above may be readily adaptable to form aperture slits. Accordingly, withdrawal of the objection of is respectfully requested.

5. Objection to the phrases "solid state scan type" and "solid state type"

The Examiner has objected to use of the phrases "solid state scan type" and "solid state type," alleging that the word "type" is indefinite. It should first be noted, as noted in responses to previous Office Actions, that "solid state type" is not recited in any of the claims. In addition, while the Applicants acknowledge that in some circumstances, use of the word "type" in claims may be indefinite, "solid state scan type" is not indefinite, as it is specifically defined in the Specification. The Applicants direct the Examiner's attention to p. 36, line 10 to p. 37, line 4 of the Specification, wherein solid state scan type aperture plates are discussed. The Specification defines a "scan type" as "the means by which an aperture is rapidly translated across a viewer's field of view" (Specification, p. 36, lines 11-2). Moreover, the Specification also describes solid state scan type aperture plates as being scan type aperture plates that do not have moving parts and provides examples of solid state scan type aperture plates (see, e.g., p. 36, line 14 to p. 37, line 4). Accordingly, the term "solid state scan type" does not render claims reciting the term "solid state scan type" indefinite. Withdrawal of the objection is respectfully requested.

6. Objection to "a hybrid screen," recited in claim 76

The Examiner has objected to claim 76, asserting that the term "hybrid" in the phrase "hybrid screen" is indefinite. Use of the term "hybrid" does not render claim 76 indefinite, as its meaning is clear in light of the Specification. The Specification states that "[t]he display 16 is preferably a high frame-rate video display device, and may employ any of a variety of display technologies. Examples of these technologies would be: High-speed liquid crystal display technology or Ferroelectric liquid crystal display (FLCD); Organic LED technology; Miniature LED technology, plasma, zero twist nematic LC; rear projection using multiple projectors or a

DLP mirror chip (described below); or a hybrid projection system based on the combination of any of these technologies" (emphasis added) (Specification, p. 20, lines 17-22). Furthermore, FIG. 14 illustrates an example of a hybrid screen, which is discussed on p. 21, lines 4-6: "a rear projection hybrid system using multiple LCD video projectors back lit by sequenced strobe lights being used as an alternative to a single high-speed display screen 16."

In addition, it should be noted that one of ordinary skill in the art would interpret "hybrid screen display," as recited in claim 76, to be equivalent to a "hybrid projection system," as recited in the Specification. As is known in the art, the term "screen" is commonly applied to many of the listed display technologies that may compose a hybrid projection system. Accordingly, the term "hybrid screen display" is not indefinite. Withdrawal of the objection is respectfully requested.

7. Objection to the phrase "capable of" as recited in claim 11

The Examiner states that "[t]he phrase 'capable of' recited in various claims is confusing and indefinite," and cites *In re Hutchison* for the proposition that use of the term capable of prevents patentability. However, under *Hutchison* and its progeny, the use of a term describing the configuration or capabilities of an element does not automatically bar the patentability of the claim. As long as the metes and bounds of the claim may be ascertained, the claim is definite enough for patentability.

Here, the use of the term "capable of" describes the resolution of the three-dimensional display being capable of displaying at least 8 viewing angles. The claim uses the term "capable of" in such a way as to describe the limitations of its elements. "[C]apable of displaying at least 8

viewing angles" is a distinct property of a display, the metes and bounds of the elements are easily determinable.

Applicant, therefore, respectfully requests the withdrawal of the Examiner's objection to the use of the term "capable of."

8. Objection to claims 1, 21, 42, 57 68 and 76 under 35 U.S.C. 132(a)

The Examiner has objected to claims 1, 21, 42, 57 68 and 76 because the phrase "open apertures scan the aperture plate in two-dimensional movements" purportedly introduces new matter in the disclosure of the invention. As discussed above, the feature of open apertures scanning an aperture plate in two-dimensional movements is not new matter, as the feature was disclosed in the original specification at FIG. 15 and p. 25, lines 5-11, for example. Accordingly, withdrawal of the objection is respectfully requested.

C. Rejections under 35 U.S.C. 103(a)

Claims 1-2, 5-18, 20, 21-23, 26-32, 34-41, 42-44, 46-52, 68-75 and 76-81 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,6,74,463 to Just et al. (hereinafter Just) in view of U.S. Patent No. 5,678,089 to Bacs Jr. et al. (hereinafter 'Bacs').

Claim 1 recites, inter alia, a three dimensional display device comprising:

> an aperture plate including apertures and opaque areas formed by closed apertures between open apertures that is disposed in front of said display screen, wherein the aperture plate is configured such that the open apertures scan the aperture plate in two-dimensional movements to generate an illusion that the opaque areas are transparent. . . .

It is respectfully submitted that claim 1 is patentable over Just and Bacs, taken singly or in combination, as the references fail to disclose or render obvious an aperture plate that is

configured such that open apertures scan an aperture plate in two-dimensional movements to generate an illusion that opaque areas are transparent. The scanning apertures disclosed by Just move in a single dimension. As illustrated in FIGS. 7A and 7B of Just, for example, the scanning apertures move in one-dimension from left to right. Nowhere does Just disclose or remotely suggest apertures that scan in two-dimensional movements.

In support of the rejection, the Examiner has stated that "Just teaches that it is a straight-forward modification to generalize the horizontal parallax case to arbitrary observation positions" (see, e.g., Final Office Action dated August 28, 2008, p. 7, para. 1 (citing Just, column 7, lines 1-4)). Further, the Examiner has interpreted Just's statement as meaning that "the single aperture technique can be modified and generalized to provide for instance full parallax, i.e. also includes vertical parallax for allowing more positions for observation positions." (see Final Office Action dated August 28, 2008, p. 7, para. 1). However, the Examiner has applied improper hindsight of the present principles in interpreting Just. Although Just mentions that the horizontal parallax case may be generalized to arbitrary observation positions, Just was referring to other single-dimension parallax lines, such as vertical or diagonal parallax. In the very next clause, Just states that the generalization to other observation positions is "hardly relevant in practice since the eyes of a human observer are arranged horizontally," as opposed to vertically or diagonally, for example. (see Just, column 7, line 3-5). Accordingly, Just merely suggests, and incidentally, explicitly dismisses in practice, that other one-dimensional scanning patterns corresponding to other observer parallax lines may be employed. Just nowhere discloses, remotely suggests or renders obvious generating three-dimensional images by using a two-dimensional scanning pattern over a screen, which enables the simultaneous display of both

vertical and horizontal parallax to provide a more realistic three-dimensional scene that appears to change when a user changes her viewing angle in any direction.

Furthermore, Bacs fails to cure the deficiencies of Just, as Bacs is directed to a completely different method for displaying a three dimension image. Just teaches applying apertures over a screen to generate a 3D image. In contrast, the display device utilized by Bacs does not employ any apertures whatsoever over a display screen. Rather, Bacs is directed to a conventional display screen that alternately presents different frames corresponding to different perspectives of a scene at a rapid rate that is imperceptible to the human eye (see, e.g., Bacs, column 1, lines 56-62; column 3, lines 51-55; column 9, lines 24-42; and column 9, line 61 to column 10, line 4). Moreover, Bacs teaches a scanning pattern of a moving aperture within a camera lens that permits the recording of frames from different perspectives without having to move the camera itself or employing multiple cameras (see, e.g., Bacs, column 5, lines 34-64; column 3, lines 36-46; column 2, lines 60-67; and column 3, lines 6-18). In view of Bacs and Just, it would not be obvious to utilize an aperture plate over a display screen that is configured such that open apertures scan an aperture plate in two-dimensional movements to generate a three dimensional image and to generate an illusion that opaque areas are transparent, as recited in claim 1.

Accordingly, claim 1 is believed to be patentable over Just and Bacs for at least the reasons discussed above. Similarly independent claims 21, 42, 57, 68 and 76 include the feature of scanning a display with open apertures in two-dimensional movements to generate an illusion that opaque areas of the display are transparent. Therefore, claims 21, 42, 57, 68 and 76 are believed to be patentable over Just for at least the reasons discussed above. Moreover, claims 2, 5-18, 20, 22, 23, 26-32, 34-41, 43, 44, 46-52, 69-75 and 77-81 are believed to be patentable due

at least to their dependencies from claims 1, 21, 42, 57, 68 and 76. Accordingly, withdrawal of the rejection is respectfully requested.

Claims 3, 4, 19, 24, 25, 33 and 45 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Just in view of Bacs in further view of U.S. Patent No. 6,094,216 to Taniguchi et al. (hereinafter 'Taniguchi').

Claims 3, 4, 19, 24, 25, 33 and 45 are dependent from claims 1, 21 and 42 and include all features recited therein. Claims 1, 21 and 42 include the feature of scanning a display with open apertures in two-dimensional movements to generate an illusion that opaque areas of the display are transparent. As discussed above, Just and/or Bacs fail to disclose or render obvious at least this feature of the claims. Furthermore, Taniguchi does not cure the deficiencies of Just and/or Bacs.

Taniguchi does not disclose or render obvious scanning a display with open apertures in two-dimensional movements, nor does it disclose or render suggest scanning a display with open apertures to generate an illusion that opaque areas of the display are transparent. As illustrated in FIG. 4B, for example, Taniguchi simply discloses moving apertures to the left or the right in one-dimension. Taniguchi fails to disclose open apertures that scan a display in two-dimensional movements. Accordingly, Taniguchi does not cure the deficiencies of Just and/or Bacs.

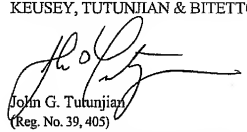
Thus, claims 3, 4, 19, 24, 25, 33 and 45 are believed to be patentable due at least to their dependencies from claims 1, 21 and 42. Withdrawal of the rejection is respectfully requested.

Conclusion

Based on the foregoing discussions and clarifications, reconsideration and withdrawal of the rejections is respectfully requested, and the application be passed to allowance, and letters patent issued in due course.

In the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicant's representatives Deposit Account No. 50-1433.

Respectfully submitted,
KEUSEY, TUTUNJIAN & BITETTO, P.C.



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